



# INSTALLATION RESTORATION PROGRAM

January 2003



## Proposed Plan for Potential Source of Contamination 51

### Naval Air Station Jacksonville Jacksonville, Florida

#### Facility Description

Naval Air Station (NAS) Jacksonville (see Figure 1) occupies approximately 3,900 acres on the west bank of the St. Johns River in southeastern Duval County, Florida. The station is located 13 miles south of downtown Jacksonville. It was commissioned on October 15, 1940 to provide facilities for pilot training and a Navy Aviation Trades School for ground crewmen. Its physical size more than doubled in support of World War II military operations. Since 1951, the facility has served the dual purpose of training pilots and ground crewmen and supporting operational carrier squadrons. In November 1989, NAS Jacksonville was added to the **National Priorities List**.

#### Site Description

**Potential Source of Contamination (PSC) 51** is located slightly north of the southern fenceline of NAS Jacksonville within the South Antenna Field (see Figure 1). Two areas are included at **PSC 51**, the Former Fire Fighting Training Area (FFTA) and the former Oil Disposal Area (ODA). **PSC 51** is a flat grass field sloping to the southeast with an unnamed creek bordering the site to the south. The FFTA was an area approximately 60 feet in diameter, and formerly used by the base fire department as a fire fighting training area. At one time the area was identifiable by barren soil and debris such as glass and metal. The ODA is approximately 50 feet in diameter, which was used to drain aircraft of hydraulic fluids, fuels, and oils. At one time this area was identifiable by barren soil. Operations prior to 1998 resulted in contamination of soil and groundwater at **PSC 51**. Both the FFTA and ODA had low-level radioactive contaminated soil removed in 1998, and the excavated areas are no longer easily identifiable. This Proposed Plan addresses the preferred cleanup plan for soil and groundwater contamination at **PSC 51**.

The surface soil at **PSC 51** is contaminated with metals including aluminum, antimony, arsenic, barium, chromium, copper, iron, lead, mercury, nickel, and vanadium. At the ODA, arsenic and vanadium are present at levels in excess of Florida Department of Environmental Protection (FDEP) **Soil Cleanup Target Levels (SCTLs)**. At the FFTA, all of the above listed metals are in excess of FDEP **SCTLs**. Past activities at the site have also resulted in **surficial aquifer** groundwater being contaminated by petroleum (e.g., gasoline) and chlorinated solvent (e.g., paint thinner) compounds in excess of FDEP **Groundwater Cleanup Target Levels (GCTLs)**.

The area of surface soil contamination at **PSC 51** is shown in Figure 1. The amount of contaminated soil has been calculated at approximately 1,114 cubic yards. The area of groundwater contamination at **PSC 51**, referred to as the **contaminant plume**, is shown on Figure 2 and the amount of contaminated groundwater has been calculated at approximately 3,921,000 gallons. The amount of contaminants in groundwater at **PSC 51** was calculated to be 11.82 pounds. During the **Remedial Investigation (RI)**, the groundwater contamination was found to be moving slowly to the southeast toward an unnamed creek.

#### About This Document

Per Section 117 of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, this document summarizes the Navy's preferred alternative for site cleanup to help the public understand and comment. This plan has been developed by the Navy, in agreement with the United States Environmental Protection Agency (USEPA) and the FDEP. The Navy will implement the remedy for **PSC 51** after considering and addressing significant comments from the public.

#### Site History

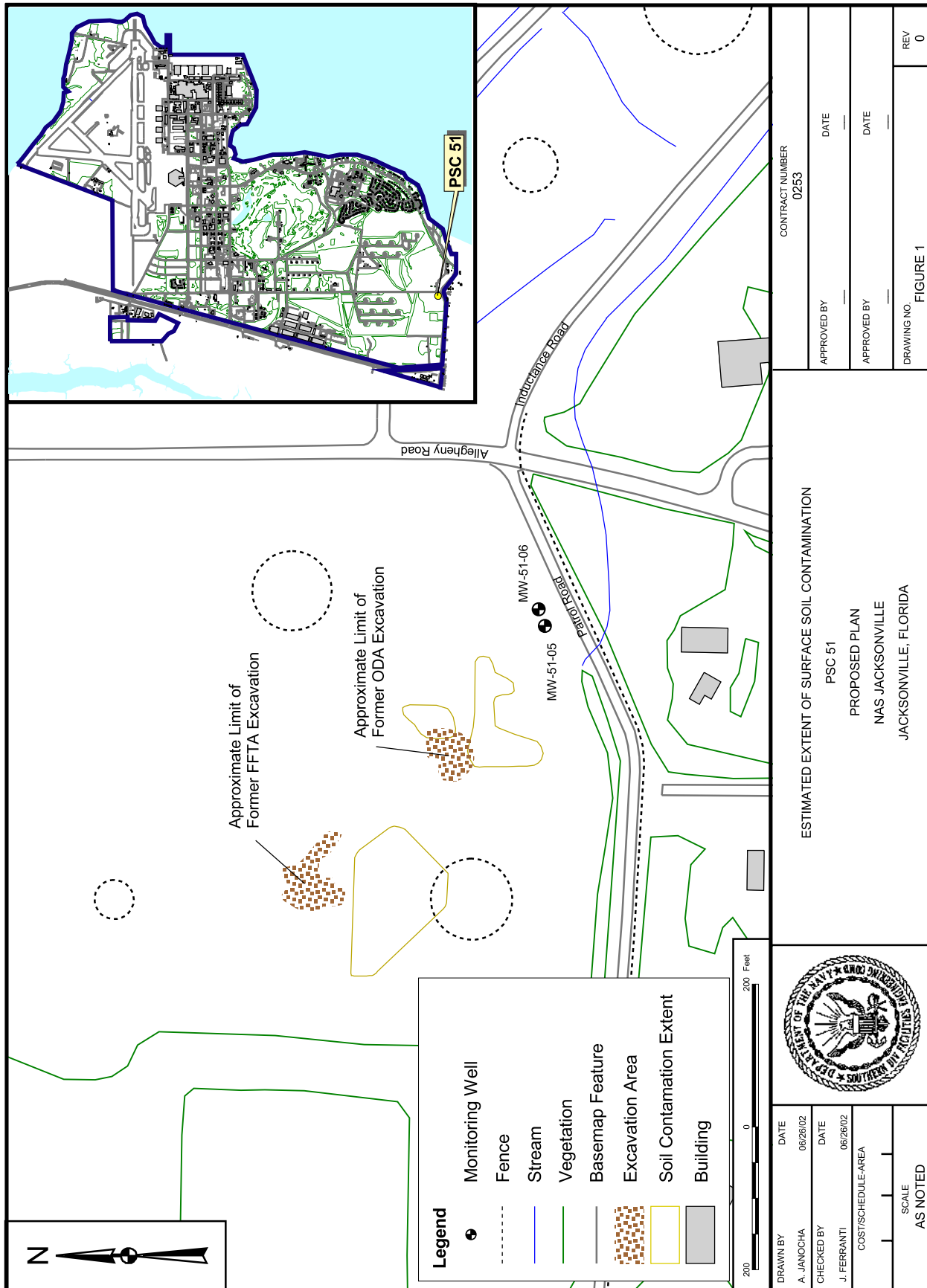
The following is a brief environmental history of **PSC 51**:

- **1943 - 1952** – The FFTA and ODA were in operation.
- **1995** – The South Antenna Field FFTA and ODA were identified as **PSC 51**.
- **1996** – Results of soil sample analysis showed metal and **volatile organic compound (VOC)** contamination in surface soil.
- **1997** – Results of sampling showed **VOC** and metal contamination in soil and groundwater. Results of the radiological survey indicated that the soil was contaminated with low level radioactive material at **PSC 51**.

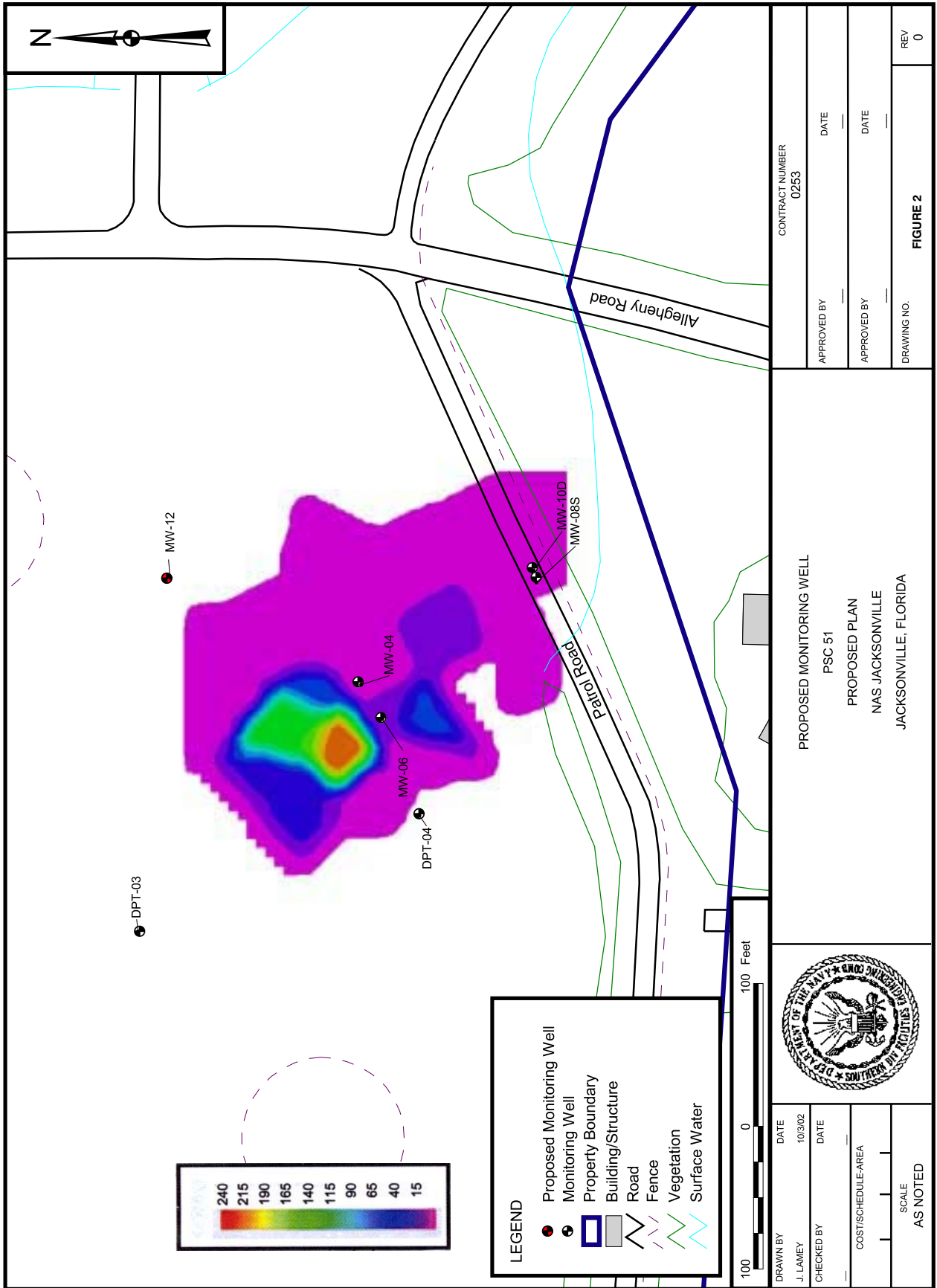
- **1998** – Approximately 1,000 cubic yards of radioactive and lead contaminated soil were dug up and removed from the ODA and FFTA. During removal activities, a 20-gallon drum containing black sludge was found at the ODA and removed. The site was backfilled with clean soil.
- **1999 - 2002** – An **RI** determined the nature and extent of contamination. Metals were found in surface soil at the FFTA and ODA at levels potentially harmful to human health. Fuel and cleaning solvent contamination was found in groundwater at **PSC 51** at levels potentially harmful to human health and the environment.
- **2002** – The **Feasibility Study (FS)** was prepared to consider soil and groundwater cleanup options. A final **RI/FS** document was issued.

*This document summarizes the Navy's preferred cleanup plan. For detailed information on the options evaluated for **PSC 51**, the documents are available for review at the **information repository** located at Webb Wesconnet Branch, Jacksonville Public Library, 6887 103<sup>rd</sup> Street, Jacksonville, Florida.*

Bolded terms throughout this Proposed Plan are explained in the Glossary of Terms beginning on Page 10.



P:\GIS\JACKSONVILLE\_NAS\APR\PSC\_51.APR SOIL CONTAMINATION MAP LAYOUT 10/9/02 JAL



P:\GIS\JACKSONVILLE\_NAS\APR\PSC\_51\APR PROPOSED MONITORING WELL 10/3/02 JAL

The purpose of this plan is to request the public's views and comments on the preferred cleanup alternative. This plan highlights information from the **RI** and **FS** report, but does not include all of the information contained in that document. The document is maintained at the **information repository**, which is located at the Webb Wesconnet Branch of the Jacksonville Public Library. In addition, this Proposed Plan can be viewed at [www.NASJAX.Navy.Mil](http://www.NASJAX.Navy.Mil) during the public comment period.

## What do you think?

The Navy, as the lead agency, is accepting formal public comments on this proposal from January 7, 2003 to February 6, 2003. You don't have to be a technical expert to comment. If you have a comment, the Navy wants to hear it before beginning the cleanup. To comment formally:

**Offer oral or written comments** during the public meeting scheduled for January 14, 2003 at the Holiday Inn (US 17 and I-295) from 7:00 to 9:00 p.m.

**Send written comments** postmarked no later than February 6, 2003 to:

Mr. Bill Dougherty  
Public Affairs Office, Box 2  
Naval Air Station Jacksonville  
Jacksonville, Florida 32212-5000  
Phone: (904) 542-4032, Fax: (904) 542-2413

**E-mail comments** by February 6, 2003 to:

Email: [doughertyb@cnrse.navy.mil](mailto:doughertyb@cnrse.navy.mil)

## Summary of Site Risks

The risk assessment analyses assumes that the site will remain an industrial area on NAS Jacksonville, which is its anticipated future use. The groundwater at the site is not used at this time and NAS Jacksonville does not anticipate future use. Understanding

this, the people that could be exposed to the soil and groundwater contamination are construction, maintenance, and occupational workers and adolescent trespassers. It is reasonable to assume that the same groups could be exposed under the future industrial use scenarios.

A **Human Health Risk Assessment (HHRA)** evaluated the potential impacts of the site contamination on construction, maintenance, and occupational workers; adolescent trespassers; and residents. Exposure to soil, sediment (mud), groundwater, and water in the creek were evaluated as potential ways to be exposed to contamination. Based on this evaluation, the **HHRA** found arsenic in surface soil as a cancer risk greater than what is acceptable by the FDEP (1.0E-06 or one in one million) for occupation workers as well as to child, adult and lifelong residents. The **HHRA** also identified contamination in groundwater that causes unacceptable cancer risks for child, adult and lifelong residents. However, for the foreseeable future, **PSC 51** is considered by the station to be an industrial area, and no residential development of **PSC 51** is expected. Table 1 shows the chemicals with cancer risks greater than what is acceptable by the FDEP. In addition, the **HHRA** reports a number called the hazard index. This value represents non-cancer risks associated with contamination. The FDEP and USEPA agree that if a calculated hazard index is greater than 1.0, then the risk presented by the contamination is not acceptable. The **HHRA** reported that the total hazard index for the child resident was greater than 1.0. The hazard index for each receptor is presented in Table 1. A more detailed explanation of these terms is included in the **HHRA**, which is part of the **RI/FS**.

An **Ecological Risk Assessment (ERA)** was performed as part of the **RI** to estimate potential impacts of the contaminants on the environment, such as various plant and animal life. The results of the **ERA** showed that metals in surface soil may be harming plant and soil organisms (bugs), but should not pose a significant risk to wildlife. The sampling indicates there are no current environmental impacts from the groundwater contamination. Risks from chemicals in surface water and sediment in the unnamed creek were

**Table 1**  
**HHRA Summary**

### **PSC 51** **NAS Jacksonville**

Media	Receptor	Compound	Cancer Risk <sup>(1)</sup>	Hazard Index <sup>(2)</sup>
Soil	Occupational Worker	Arsenic	1.1E-06	0.03
	Child Resident <sup>(3)</sup>		6.3E-06	0.61
	Adult Resident		1.2E-04	0.60
	Lifelong Resident		9.2E-06	NA
Groundwater	Child Resident <sup>(3)</sup>	Vinyl Chloride, 1,1-DCE and Benzene	3.3E-05	0.66
	Adult Resident		1.1E-04	0.52
	Lifelong Resident		1.5E-04	NA
<b>Notes:</b> (1) Acceptable cancer risks have been established by the FDEP (1.0E-06) and USEPA (1.0E-04). (2) The FDEP and USEPA have established an acceptable Hazard Index at 1.0. (3) The added hazard risk for this receptor from soil and groundwater combined is 1.3, which exceeds the regulatory requirements. NA Not Applicable				

determined to be acceptable. The **ERA** determined that if the site use of **PSC 51** remains unchanged, further action is not necessary.

It is the Navy's position that the preferred cleanup alternative identified in this plan, or one of the other active measures considered in this Proposed Plan, is necessary to protect human health and the environment.

## Why is Cleanup Needed?

The Navy's studies of **PSC 51** have resulted in the following conclusions:

- As a result of past waste disposal practices, multiple chemicals that could be harmful to human health and the environment were found at **PSC 51**.
- Following the 1998 soil **Removal Action**, several contaminants still remained in the surface soil and the groundwater of the **surficial aquifer** at levels considered unacceptable by the regulators. In addition, soil and groundwater contamination levels exceed **SCTLs** and **GCTLs**.
- It is the Navy's position that the preferred cleanup alternative presented in this Proposed Plan will protect public health and the environment.

## What are the Cleanup Objectives and Levels?

Using the site investigation information and the results of the **HHRA** and **ERA** based on industrial land use scenarios (assumes institutional controls are used to prevent future residential land use), the Navy identified the following **Remedial Action Objectives (RAOs)** at **PSC 51**:

- Protect human health by eliminating or preventing exposure to **chemicals of concern (COCs)** in soil.
- Protect human health and the environment by preventing potential exposure to **chemicals of potential concern (COPCs)** in surface water.
- Reduce human health risk from exposure to groundwater.
- Reduce groundwater contamination at **PSC 51** to meet the **GCTLs**.

Table 2 shows the **COCs/COPCs** and **preliminary remedial goals (PRGs)**.

## Cleanup Alternatives for PSC 51

The **PSC 51 RI/FS** reviews options that the Navy considered for cleanup of **PSC 51**. These options, referred to as "Cleanup Alternatives," are different combinations of plans to restrict access and to contain, remove, or treat contamination in order to protect human health and the environment.

### *The Proposed Cleanup Plan*

To clean up contaminated soil and groundwater at **PSC 51**, the Navy proposes the following:

- Use **institutional controls** to prevent residential development of the site and limit the potential exposure to soil and groundwater contamination. Effectiveness of these controls would be verified by regular site inspections.
- Monitor groundwater and surface water quality to evaluate decreases in contaminant concentrations, measure compounds

## Soil Cleanup Alternatives

The preferred cleanup alternative for soil is Limited Action, with an estimated Capital Cost of \$5,000; an Operation and Maintenance cost of \$71,000; and a Total Present Worth Cost (including contingency costs of \$25,000) equaling \$101,000.

### Limited Action

#### *Soil Cleanup Alternative S2: Limited Action*

**Institutional controls** (see Page 8) would be used to prevent residential development and unauthorized excavation or development at **PSC 51**. Soil sampling would not be used because metal concentrations in soil are not expected to change for a long time. Warning signs would be placed near contaminated soil to alert NAS Jacksonville personnel and workers of the hazards associated with site surface soil. **PSC 51** would be added to the current **Land Use Control Implementation Plan (LUCIP)** at NAS Jacksonville. In addition, NAS Jacksonville has procedures in place for construction/excavation projects to be reviewed and approved by the installation Facilities and Environmental Department (FED) before they are performed. FED would review these projects for potential problems. Under the **LUCIP** program, **PSC 51** would be monitored several times a year to assure that the measures are effective. Every five years, a site review would evaluate the continued effectiveness of the cleanup alternative and to determine if additional actions are needed.

The following other soil cleanup actions were evaluated in the **RI/FS**.

### No Action

#### *Soil Cleanup Alternative S1: No Action*

Evaluation of the No Action alternative is required by law as a basis for comparison with other alternatives. There are no costs associated with this alternative.

### Excavation and Disposal

#### *Soil Cleanup Alternative S3: Excavation and Off-Base Disposal*

Approximately 1,100 cubic yards of contaminated soil would be excavated and transported to a landfill for disposal. Sampling would be used to verify that the contaminated soil was removed. The excavated areas would be backfilled with clean soil. After backfilling and the groundwater contamination is cleaned, the land use of **PSC 51** would be unrestricted. Soil Cleanup Alternative S3 included an estimated Capital Cost of \$535,000. Since the soil contamination would be removed during the active cleanup, there would be no

that indicate natural breakdown is occurring, and verify that the groundwater contamination is not contaminating the creek.

- Allow **natural attenuation** to occur, which removes contaminants through biological and other natural processes.
- Perform contingency cleanup actions if contaminated groundwater discharges to the unnamed creek, or if **natural attenuation** does not effectively reduce groundwater contaminants.
- Perform a site review every 5 years to verify the proposed remedy is working. If this is not the case, another more aggressive cleanup approach (contingency actions) may be used.



**Table 2**  
**COCs, COPCs and PRGs**

**PSC 51**  
**NAS Jacksonville**

COCs/COPCs	Range of Detections	PRGs <sup>(1)</sup> Residential/Industrial	Common Uses
COCs for Soil (mg/kg)			
Aluminum	1,460 – 79,200	72,000/*	Metals found commonly in nature.  Many and varied uses.
Antimony	0.37 – 46.7	26/240	
Arsenic	0.47 – 6.1 <sup>(6)</sup>	0.8/3.7	
Barium	9.6 – 319	110/87,000	
Copper	11 – 7,310	110/76,000	
Iron	228 – 40,400	23,000/480,000	
Lead	3.3 – 1190 <sup>(6)</sup>	400/920	
Mercury	0.02 – 5.4	3.4/26	
Nickel	3.1 - 544	110/28,000	
Vanadium	1.7 – 29.8	15/7400	
COPCs for Surface Water (µg/L)			
2-Butanone	0.7	120000 <sup>(3)</sup>	Solvent for coatings, adhesives, and printing inks.
Benzene	ND	<71.28 annual average <sup>(2)</sup>	Component of gasoline and fuels.
1,2-Dichloroethene	ND	7,000 <sup>(3)</sup>	Used to produce solvents and in chemical mixtures. <sup>(5)</sup>
Ethylbenzene	ND	605 <sup>(3)</sup>	Component of gasoline and fuels.
Methylene chloride	ND	<1,580 annual average <sup>(2)</sup>	Paint stripper and degreaser.
Naphthalene	ND	26 <sup>(3)</sup>	Component of gasoline and fuels.
Toluene	ND	475 <sup>(3)</sup>	Component of gasoline and fuels.
Trichloroethene	ND	<80.7 annual average <sup>(2)</sup>	Metal Degreaser.
Vinyl Chloride	ND	525 <sup>(4)</sup>	Used to make polyvinyl chloride (PVC). <sup>(5)</sup>
Xylenes	ND	370 <sup>(3)</sup>	Component of gasoline and fuels.
COCs for Groundwater (µg/L)			
Benzene	1 – 240	1	Component of gasoline and fuels.
1,2-Dichloroethene	0.33 – 110	63	Used to produce solvents and in chemical mixtures. <sup>(5)</sup>
Ethylbenzene	0.17 – 85	30	Component of gasoline and fuels.
Naphthalene	1.7 - 120	20	Component of gasoline and fuels.
Toluene	1.7 – 470	40	Component of gasoline and fuels.
Trichloroethene	0.097 – 78	3	Metal Degreaser.
Vinyl Chloride	1 – 37.3	1	Used to make PVC. <sup>(5)</sup>
Xylenes	1 – 380	20	Component of gasoline and fuels.

**NOTES:**

(1) Florida Administrative Code (FAC) 62-777 Residential and Industrial direct exposure **SCTLs** for soil and **GCTLs** for groundwater.

(2) Class III Predominantly Fresh Water Classification from the FAC Chapter 62-302 Surface Water Quality Standards.

(3) FAC Chapter 62-777 Freshwater Surface Water Criteria.

(4) National Recommended Water Quality for Priority Toxic pollutants.

(5) This chemical is also a breakdown product of other chlorinated compounds (e.g., trichloroethene).

(6) Statistical analysis was performed in the **RI/FS** to show that the range of detections is acceptable for an industrial scenario.

\* Contaminant is not a health concern for this scenario.

ND = not detected

µg/L = micrograms per liter

mg/kg = milligrams per kilogram

Operation and Maintenance costs. Therefore, the Total Present Worth Cost (including contingency costs of \$80,000) for this option was calculated at \$615,000.

## Groundwater Cleanup Alternatives

The preferred cleanup alternative for groundwater is Monitored **Natural Attenuation**, with an estimated capital cost of \$25,000; a present worth Operation and Maintenance cost of \$309,000; and a Total Present Worth Cost (including contingency costs of \$50,000) of \$384,000.

### Monitored Natural Attenuation

#### ***Groundwater Cleanup Alternative G2: Natural Attenuation, Monitoring, and Institutional Controls***

This cleanup action includes **institutional controls**, monitoring, and **natural attenuation**. **Natural attenuation** is the naturally occurring breakdown of contamination. Microorganisms within the aquifer reduce contaminant levels naturally. **Institutional controls** would restrict use of the **surficial aquifer** groundwater. **Institutional controls** would not be required for surface water at the current time because contamination has not been detected in surface water. Monitoring would consist of regularly sampling and analyzing groundwater to check the decrease in contamination and to verify that the chemicals are not moving away from the site. Surface water would be monitored to check that it is not being contaminated by the groundwater. The proposed sampling schedule in the **RI/FS** for costing purposes was quarterly during the first year, semi-annually during the second and third years, and annually after that. Groundwater milestone dates will be used to check the progress of **natural attenuation**. Every five years, a site review (Five-year Reviews) would evaluate the effectiveness of this cleanup alternative. If **natural attenuation** and **institutional controls** fail to adequately protect human health and the environment, additional cleanup measures would be evaluated.

The following are the other groundwater cleanup alternatives that were evaluated in the **RI/FS**.

### No Action

#### ***Groundwater Cleanup Alternative G1: No Action***

Evaluation of the No Action alternative is required by law as a basis for comparison with other alternatives. There are no costs associated with this alternative.

### In Situ (In Place) Treatment

#### ***Groundwater Cleanup Alternative G3: In Situ Enhanced Bioremediation with Oxygen Release Compounds® (ORC®), Groundwater Monitoring, and Institutional Controls***

A chemical known as ORC® would be injected into the groundwater contamination to enhance **natural attenuation**. These compounds would be injected at 300 to 400 locations in a grid pattern over the **contaminant plume**. A second injection event may occur one year after the first injection, if needed. **Institutional controls**, Five-year

Reviews, and groundwater and surface water monitoring would be the same as for Groundwater Cleanup Alternative G2. Groundwater Cleanup Alternative G3 included an estimated Capital Cost of \$365,000. The present worth of the Operation and Maintenance costs was estimated at \$180,000. Therefore, the Total Present Worth Cost (including contingency costs of \$55,000) for this option was calculated at \$600,000.

#### ***Groundwater Cleanup Alternative G4: In Situ Chemical Oxidation, Monitoring, and Institutional Controls***

Hydrogen peroxide would be injected into the groundwater contamination using injection wells. The hydrogen peroxide reacts with the contamination to produce carbon dioxide and water. Approximately 60,000 pounds (6,000 gallons) of hydrogen peroxide would be used to cleanup the groundwater contamination. A study during remedial design would determine the actual amount of hydrogen peroxide required. Groundwater monitoring would be used to determine the effectiveness of the cleanup. Surface water monitoring would verify that the groundwater contamination has not contaminated the surface water. **Institutional controls** and Five-year Reviews would be the same as for Groundwater Cleanup Alternative G2. Groundwater Cleanup Alternative G4 included an estimated Capital Cost of \$381,000. The present worth of the Operation and Maintenance costs was estimated at \$161,000. Therefore, the Total Present Worth Cost (including contingency costs of \$271,000) for this option was calculated at \$813,000.

#### ***Groundwater Cleanup Alternative G6: Air Sparging, Monitoring, and Institutional Controls***

An air sparging system would be installed at the site and would consist of 10 to 15 two-inch wells installed to 40 feet below the ground surface. Compressed air would be injected into the wells to destroy the groundwater contamination. A study during the remedial design phase would be used to fine-tune the design of the air sparging system. Groundwater and surface water monitoring would evaluate the effectiveness of the cleanup. **Institutional controls** and Five-year Reviews would be the same as for Groundwater Cleanup Alternative G2. Groundwater Cleanup Alternative G6 included an estimated Capital Cost of \$322,000. The present worth of the Operation and Maintenance costs was estimated at \$291,000. Therefore, the Total Present Worth Cost (including contingency costs of \$23,000) for this option was calculated at \$736,000.

### Ex Situ Treatment and Disposal

#### ***Groundwater Cleanup Alternative G5: Extraction, On-Site Treatment (Pump and Treat), Treated Groundwater Discharge, Monitoring, and Institutional Controls***

Groundwater would be removed through two wells and treated to remove the contamination prior to discharge to the sanitary sewer. Groundwater and surface water monitoring would evaluate the effectiveness of the cleanup. **Institutional controls** and Five-year Reviews would be the same as for Groundwater Cleanup Alternative G2. Groundwater Cleanup Alternative G5 included an estimated Capital Cost of \$266,000. The present worth of the Operation and Maintenance costs was estimated at \$504,000. Therefore, the Total Present Worth Cost (including contingency costs of \$233,000) for this option was calculated at \$1,003,000.

## Use of Applicable or Relevant and Appropriate Requirements (ARARs) in Evaluation Process

**ARARs** are Federal and State environmental requirements used to evaluate the level of site cleanup, to formulate cleanup alternatives, and to control the cleanup action process. Potential chemical-specific, location-specific, and action-specific **ARARs** that apply to **PSC 51** are discussed in the **FS**, which can be found at the **information repository**. Each alternative has been evaluated to determine its compliance with **ARARs**. The preferred cleanup alternative complies with all **ARARs**.

## Detailed Analysis of Cleanup Alternatives

Per **CERCLA**, a detailed review of each cleanup alternative must be performed by using nine evaluation criteria. The first eight criteria were reviewed during the **FS**, and a summary is presented on Table 3 for the soil and groundwater cleanup alternatives. Consult the **PSC 51 RI/FS** report for more detailed information.

As indicated on Table 3, limited action including **institutional controls** meets all criteria except one, while excavation and disposal meets them all. However, excavation and disposal involves moving the contamination from one location to another and only will reduce mobility. This alternative does not reduce toxicity or volume. Soil Cleanup Alternative S2 will be protective of human health and the environment and provide short and long term protection through restricted site use. It is easily implemented and meets the **ARARs**. Therefore, considering cost and potential risk, the Navy prefers Soil Cleanup Alternative S2.

The levels of contaminants in the groundwater are very low, which has been proven to be difficult to cleanup in a cost-effective manner. Groundwater contamination at sites similar to **PSC 51** is often allowed to naturally attenuate if there is no significant health or environmental risk. At **PSC 51** the **HHRA** and the **ERA** indicate that the risks posed are small if the site is properly controlled. At **PSC 51**, most of the groundwater cleanup alternatives meet all seven criteria (see Table 3). However, considering the chemical concentrations and the potential risk scenarios, the Navy prefers Groundwater Cleanup Alternative G2, which will achieve site cleanup requirements at the lowest cost. In addition, Groundwater Cleanup Alternative G2 protects human health and the environment and provides short-term protection through restricted use of groundwater from the site. It meets federal and state requirements. Lastly, the contamination will be reduced naturally, which will provide long term protection and permanence and comply with the requirement to reduce toxicity, mobility or volume through passive treatment.

The FDEP and USEPA were involved in the selection of the preferred cleanup alternative. However, formal acceptance will be made after the public comment period with their approval of the **Record of Decision (ROD)**. As part of the community acceptance process, the **NAS Jacksonville Partnering Team** briefed the **Restoration Advisory Board (RAB)** in June 2002. During the upcoming public comment period, the Navy welcomes comments on the preferred cleanup plan and on the other alternatives that were evaluated.

## A Closer Look at the Navy's Proposed Cleanup Plan

### 1. Institutional Controls

Remedies that include land use controls (LUCs) leave hazardous substances in place that pose a potential future risk and will require LUCs for an indefinite period of time. NAS Jacksonville, in conjunction with the USEPA and FDEP, has developed a Land Use Control Assurance Plan (LUCAP) to ensure that land use restrictions are maintained and periodically verified. The site-specific **LUCIP** referenced in this Proposed Plan will provide specific measures required for LUCs. NAS Jacksonville is responsible for implementing, monitoring, maintaining, reporting on and enforcing the LUC element of the cleanup action. The **LUCIP** will remain effective as needed to be protective of human health and the environment.

For soil contamination, base maps, land-use plans, and the **LUCIP** for land in the vicinity of **PSC 51** will state that exposure to soil may pose a health risk. The purpose of the LUC is to prevent residential development, and unauthorized construction and excavation. **PSC 51** will be included in the current **LUCIP** at NAS Jacksonville and monitored four times a year to assure that measures, such as signs, are maintained. Routine site sampling will not occur because metal concentrations in the soil are not expected to change for several decades. Warning signs will be posted along the boundary of **PSC 51** to warn NAS Jacksonville personnel and workers of the hazards associated with the site.

For groundwater contamination, **PSC 51** will be added to the **LUCIP** program and land-use plans will show that groundwater is not safe to drink. The Navy will formally request that the St. Johns River Water Management District (SJRWMD) not issue permits for the installation of potable wells in the **surficial aquifer**. SJRWMD will be reminded annually of the **PSC 51** groundwater contamination and groundwater use restrictions. These restrictions would be removed only when a five-year site review indicates, based on the groundwater monitoring results, that the **PSC 51** cleanup levels have been achieved.

### 2. Natural Attenuation and Long-Term Monitoring

Groundwater will be monitored for contamination breakdown to assess the effectiveness of **natural attenuation** as a treatment for the **surficial aquifer** at **PSC 51**. Six existing monitoring wells and a new monitoring well northeast of the groundwater plume at **PSC 51** will be used for groundwater monitoring. These wells are shown on Figure 2. The proposed monitoring program will begin with quarterly sampling for the first two years and semi-annual sampling in years three and four. The Navy will evaluate the monitoring frequency for changes after the fourth year. Plume size, chemical concentrations, and movement of the groundwater plume will be monitored. Groundwater monitoring will continue until cleanup is complete or, unless during a five-year review, site conditions suggest that a different cleanup method should be considered.

Surface water monitoring will be performed at **PSC 51** to verify that groundwater discharges to the unnamed creek south of the site do not cause the surface water contamination. Surface water samples will be collected during each groundwater monitoring event.



Table 3  
Summary of Comparison of Soil and Groundwater Cleanup Alternatives

PSC 51  
NAS Jacksonville

Nine Criteria <sup>(1)</sup>	Soil Cleanup Alternative			Groundwater Cleanup Alternative					
	S1 No Action	S2 Limited Action*	S3 Excavation and Disposal	G1 No Action	G2 Monitored Natural Attenuation*	G3 Enhanced Biodegradation	G4 Chemical Oxidation	G5 Extraction and Treatment	G6 Air Sparging
Protects human health and the environment	X <sup>(2)</sup>	✓	✓	X <sup>(2)</sup>	✓	✓	✓	✓	✓
Meets Federal and State requirements	X <sup>(2)</sup>	✓	✓	X <sup>(2)</sup>	✓	✓	✓	✓	✓
Provides long-term protection and permanence	X	✓	✓	✓	✓	✓	✓	✓	✓
Reduces toxicity, mobility, or volume through treatment	X	X	✓	✓	✓	✓	✓	✓	✓
Provides short-term protection	X	✓	✓	X	✓	✓	✓	✓	✓
Implementability	✓	✓	✓	✓	✓	✓	✓	✓	✓
State acceptance	Formal acceptance will be provided when the FDEP approves.								
Community acceptance	To be determined after the public comment period and discussed in the ROD.								
Estimated cost (present worth)	\$0	\$101,000	\$535,000	\$0	\$384,000	\$600,000	\$813,000	\$1,003,000	\$736,000
Time to reach cleanup goals (in years)	(3)	30 <sup>(3)</sup>	1	(3)	10	5	2	9	5

**NOTES:**

X : Does not meet criterion

✓ : Meets criterion

\* : Preferred cleanup alternative

<sup>(1)</sup> Remedial alternatives are examined with respect to the nine criteria set forth by **CERCLA** and factors described in the USEPA **RI/FS** Guidance Manual.

<sup>(2)</sup> Mechanisms would not be in place to determine whether the alternative would comply with **ARARs** or achieve the **RAO**.

<sup>(3)</sup> Time to achieve cleanup goals is unknown; 30 years was used as a default value for costing based on **CERCLA** guidance.

### 3. Groundwater and Surface Water Monitoring Reporting

Groundwater and surface water monitoring reports will be prepared to document contamination levels and **natural attenuation** conditions after each monitoring event. A model showing groundwater and contamination flow will be created and will estimate the expected duration of the cleanup, predict where the contamination will move, and how it will break down.

### 4. Five-Year Reviews

The cleanup alternative selected for **PSC 51** will be reviewed along with the other Installation Restoration sites during the five-year reviews. Statutory five-year reviews are required at NAS Jacksonville due to the Superfund Amendments and Reauthorization Act (SARA) of 1986. The next scheduled five-year review for NAS Jacksonville is due on March 6, 2005.

### 5. Contingency Cleanup Plan

If the results of a five-year review show that the preferred cleanup alternative has failed or will fail to cleanup the groundwater contamination within the prescribed timeframe, Groundwater Cleanup Alternative G3 will be used. If groundwater contamination reaches the unnamed creek south of **PSC 51** and causes surface water contamination, Groundwater Cleanup Alternative G3 will be used. For either contingency cleanup action, another **CERCLA** document would be required.

Based on the information currently available, the Navy believes that the above proposed cleanup plan provides the best cleanup method and expects it to satisfy the following statutory requirements of **CERCLA** §121(b): (1) be protective of human health and the environment; (2) comply with **ARARs**; (3) be cost effective; (4) use permanent solutions to the maximum extent practical; and (5) satisfy the preference for active clean up.

## Agency Concurrence

The Navy selected the preferred cleanup alternative in concurrence with both the USEPA and FDEP. These agencies will issue formal acceptance after public participation is concluded.

## What Impacts Would the Selected Cleanup Alternative Have on the Local Community?

Since the selected cleanup actions do not involve active treatment of soil or groundwater, the local community beyond the borders of **PSC 51** and NAS Jacksonville are not expected to be affected. However, with any contaminated site there are a few potential situations that may affect the local community. The following are impacts of the preferred cleanup alternative:

- Soil Cleanup Alternative S2, Groundwater Cleanup Alternative G2 and the proposed contingency actions do not immediately achieve safe levels as determined by the FDEP and USEPA and will require administrative action (**LUCIP**) to restrict land (prevent residential use) and groundwater use. For Soil Cleanup Alternative S2, the site would be restricted for hundreds of years.
- Groundwater Cleanup Alternative G2 and the proposed contingency action will involve removing small amounts of contaminated material off site for disposal and may pose a risk to nearby communities. However, measures (e.g., use of experienced transporters, use of containers to prevent releases) will be taken to reduce and control these risks.
- The contingency actions involve on-site treatment and would limit use and/or development until the site is cleaned up.

## Why Does the Navy Recommend this Proposed Plan?

The preferred cleanup alternative is recommended for the following reasons:

- Although soil contamination exceeds the safe levels for residential areas, it is acceptable for industrial areas. With the controlled access at **PSC 51** and the **LUCIP** program currently in place at NAS Jacksonville, it is expected that the proposed cleanup actions provided by Soil Cleanup Alternative S2 are satisfactory for the protection of human health. The cleanup actions involved with Soil Cleanup Alternative S3 will remove the contaminated soil at **PSC 51** and potential human health risks associated with the site; however, the contaminated soil would be moved to a landfill with monitoring and restrictions similar to the restrictions proposed in Soil Cleanup Alternative S2. If the land use changes from industrial to residential, other cleanup technologies such as Soil Cleanup Alternative S3 may be considered.
- **PSC 51** does not currently provide a significant ecological habitat. Additionally, there is no current land use at **PSC 51**, and given the location of the **PSC** within the boundaries of NAS Jacksonville, future land use is expected to remain industrial in nature.
- Groundwater at **PSC 51** is contaminated above regulatory criteria and presents a potential human health hazard. The amount of contaminants in the aquifer at **PSC 51** was calculated in the **RI/FS** to be minimal (approximately 12 pounds) and the levels relatively low. The preferred groundwater cleanup alternative could result in a reduction of groundwater contaminants at **PSC 51**; and, with the proposed surface water monitoring and LUCs, the preferred cleanup alternative will protect human health and reduce contaminant levels over time. **Natural attenuation** has been evaluated at **PSC 51** and appears to be an effective cleanup method. In addition, if the proposed monitoring shows that **natural attenuation** is ineffective, contingency actions will be performed. Therefore, Groundwater Cleanup Alternative G2 is recommended as a feasible and cost effective alternative for the cleanup of groundwater at **PSC 51**.

## Next Steps:

The Navy will consider and address all significant public comments received during the comment period. The responses to written comments will be included in the Responsiveness Summary, included in the **ROD**. After the **ROD** is signed, it will be made available to the public at the **information repository** at Webb Wesconnet Branch of the Jacksonville Public Library, 6887 103<sup>rd</sup> Street, Jacksonville, Florida.

## Glossary of Terms

This glossary defines the terms used in this Proposed Plan. The definitions in this glossary apply specifically to this Proposed Plan and may have other meanings when used in different circumstances.

**Applicable or Relevant and Appropriate Requirements (ARARs):** The federal, state, and local environmental rules, regulations, and criteria that must be met by the selected cleanup action under **CERCLA**.

**Chemicals of Concern (COCs):** A substance detected at a level and/or in a location where it could have an adverse effect on human health and the environment.

**Chemicals of Potential Concern (COPCs):** A substance detected at a level and/or location that was determined during the **RI** to possibly have the potential for adverse effects on human health and the environment.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):** A Federal law also known as “Superfund.” This law was passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). This law created a special tax that goes into a trust fund to investigate and cleanup abandoned or uncontrolled hazardous waste sites. However, Federal facilities are funded separately.

**Contaminant plume:** An area of groundwater with levels of one or more **COCs** greater than those authorized by federal, state, and local environmental regulations.

**Ecological Risk Assessment (ERA):** An evaluation of current and future potential for adverse environmental effects from exposure to site contaminants.

**Feasibility Study (FS):** A report that presents the development, analysis, and comparison of cleanup alternatives.

**Groundwater Cleanup Target Levels (GCTLs):** Groundwater quality levels established by the Florida Administrative Code. Contaminant levels exceeding these values must be reduced to below these values.

**Human Health Risk Assessment (HHRA):** An evaluation of current and future potential for adverse human health effects from exposure to site contaminants.

**Information Repository:** The public location for community access of documents regarding the installation cleanup activities. The NAS Jacksonville **information repository** is located at the Webb Wesconnet Branch of the Jacksonville Public Library, 6887 103<sup>rd</sup> Street, Jacksonville, Florida.

**Institutional Controls:** Administrative measures taken to restrict site access, current land use or future development, or groundwater use. Typical **institutional controls** consist of deed restrictions. **Institutional controls** concerning land development are also referred to as land use controls.

**Land Use Control Implementation Plan (LUCIP):** The institutional control program in place at NAS Jacksonville that prohibits land use and restricts site access.

**NAS Jacksonville Partnering Team:** A team of representatives from several governmental agencies and contractors working together to coordinate and cleanup contaminated sites at NAS Jacksonville. The team includes representatives of the USEPA and FDEP.

**National Priorities List:** The list of select national **CERCLA** sites.

**Natural Attenuation:** A cleanup technique, which relies on the natural breakdown of groundwater contamination to significantly reduce the levels of contaminants in soil or groundwater.

**Potential Source of Contamination (PSC):** An area where environmental contamination was identified.

**Preliminary Remedial Goal (PRG):** An acceptable level of contaminants based on environmental regulatory guidelines.

**Record of Decision (ROD):** An official document that describes the selected cleanup action for a specific site. The **ROD** documents the cleanup selection process and is issued by the Navy following the public comment period.

**Remedial Action Objective (RAO):** A cleanup objective agreed upon by the **NAS Jacksonville Partnering Team**. One or more RAOs are typically formulated for each environmental site.

**Remedial Investigation (RI):** A report that describes the site, documents the type and location of environmental contaminants, and presents the results of the risk assessment.

**Removal Action:** A cleanup action performed to address an immediate environmental threat.

**Restoration Advisory Board (RAB):** A community action group that meets regularly to be briefed by the Navy and their contractors on the progress of environmental investigations and cleanup activities for a given facility. The **RAB** provides the opportunity for the community to give input into the cleanup program before final decisions are made.

**Soil Cleanup Target Levels (SCTLs):** These are regulatory levels established to guide cleanups for sites in Florida.

**Surficial Aquifer:** A layer of groundwater that is separated from deeper groundwater by a confining formation. At **PSC 51**, the **surficial aquifer** typically extends from approximately 5 feet below ground surface to approximately 50 feet below ground surface.

**Volatile Organic Compounds (VOCs):** Organic compounds that evaporate readily at normal air temperatures. Typical **VOCs** include the light fraction of gasoline (benzene, toluene, xylenes) and low molecular weight solvents, such as trichloroethene.

## Submitting Comments

During the 30-day comment period, the Navy will accept written comments and hold a public meeting where community members can ask questions or voice concerns.

Written comments should be sent to:

Mr. Bill Dougherty  
Public Affairs Office, Box 2  
Naval Air Station Jacksonville  
Jacksonville, Florida 32212-5000  
Fax: (904) 542-2413

The Navy will review comments received at the meeting and written comments received during the comment period before making a final clean-up decision. Written comments will be included in the Responsiveness Summary contained in the **ROD**.

## For More Detailed Information

To help the public understand and comment on the preferred cleanup alternative for the site, this document summarizes a number of reports and studies. The technical and public information documents prepared to date for the site are available at the following **information repository**:

Webb Wesconnet Branch  
Jacksonville Public Library  
6887 103<sup>rd</sup> Street  
Jacksonville, Florida  
(904) 778-7305



## Use This Space to Write Your Comments or to Be Added to the Mailing List

Please use this form for your written comments and mail to the address below. Your comments must be postmarked no later than February 6, 2003.

Mr. Bill Dougherty  
Public Affairs Office, Box 2  
Naval Air Station Jacksonville  
Jacksonville, Florida 32212-5000  
Email: doughertyb@cnrse.navy.mil

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(Attach additional sheets as needed.)

Comment submitted by: \_\_\_\_\_

### Mailing List Additions, Deletions, or Changes

I would like to:

- ☐ be added to the site mailing list.
- ☐ note a change of address.
- ☐ be deleted from the mailing list.
- ☐ obtain additional information concerning the RAB.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Please check the appropriate box and fill in the correct address information above.



**Naval Air Station Jacksonville  
Operable Unit 5, PSC 51  
Public Comment Sheet (Continued)**

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Fold, staple, stamp, and mail \_\_\_\_\_

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Place  
Stamp  
Here

MR. BILL DOUGHERTY  
PUBLIC AFFAIRS OFFICE, BOX 2  
NAVAL AIR STATION JACKSONVILLE  
JACKSONVILLE, FL 32212-5000